

1 WHAT IS CLAIMED IS:

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3 1. A method for immunizing an animal against heterologous HIV-1 comprising  
4 administering to said animal an immunogen comprising at least one modified HIV-1  
5 envelope protein or fragment thereof, or DNA or virus encoding said at least one  
6 modified HIV-1 envelope protein or fragment thereof, or a combination thereof, said  
7 modified envelope protein or fragment thereof having a V2 region deletion, wherein  
8 said animal exhibits immunity to at least one HIV-1 strain other than that of said  
9 immunogen.

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11 2. The method of claim 1 wherein said immunity comprises a humoral response.

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13 3. The method of claim 1 wherein said immunogen comprises a modified HIV-1  
14 envelope protein from a clade-B HIV-1 strain.

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16 4. The method of claim 3 wherein said HIV-strain is SF162.

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18 5. The method of claim 4 wherein said modified HIV-1 envelope protein is SEQ ID  
19 No:2 or SEQ ID No:4.

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21 5. The method of claim 4 wherein said DNA encoding said at least one modified HIV-1  
22 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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24 6. The method of claim 2 wherein said humoral response comprises neutralizing  
25 antibodies.

- 1 7. The method of claim 2 wherein said humoral response comprises protective  
2 antibodies.  
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- 4 8. The method of claim 1 wherein said animal is a human.  
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- 6 9. A method for eliciting a heterologous immune response to HIV-1 in an animal  
7 comprising immunizing said animal with an immunogen comprising at least one  
8 modified HIV-1 envelope protein or fragment thereof, or DNA or virus encoding said  
9 at least one modified HIV-1 envelope protein or fragment thereof, or a combination  
10 thereof, said modified envelope protein or fragment thereof having a V2 region  
11 deletion, wherein said animal exhibits a an envelope-specific immune response to at  
12 least one HIV-1 strain other than that of said immunogen.  
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- 14 10. The method of claim 9 wherein said envelope-specific immune response comprises a  
15 humoral response.  
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- 17 11. The method of claim 9 wherein said immunogen comprises a modified HIV-1  
18 envelope protein from a clade-B HIV-1 strain.  
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- 20 12. The method of claim 11 wherein said HIV-strain is SF162.  
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- 22 13. The method of claim 12 wherein said modified HIV-1 envelope protein is SEQ ID  
23 No:2 or SEQ ID No:4.  
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- 25 14. The method of claim 12 wherein said DNA encoding said at least one modified HIV-1  
26 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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2 15. The method of claim 10 wherein said humoral response comprises neutralizing  
3 antibodies.

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5 16. The method of claim 10 wherein said humoral response comprises protective  
6 antibodies.

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8 17. The method of claim 9 wherein said animal is a human.

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10 18. A pharmaceutical composition for immunizing an animal against HIV-1 virus  
11 comprising an effective heterologous envelope-specific immune response-eliciting  
12 amount of at least one modified HIV-1 envelope protein or fragment thereof, or DNA  
13 or virus encoding said at least one modified HIV-1 envelope protein or fragment  
14 thereof, or a combination thereof, said modified envelope protein or fragment thereof  
15 having a V2 region deletion; and a pharmaceutically-acceptable carrier or excipient.  
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17 19. The pharmaceutical composition of claim 18 wherein said modified HIV-1 envelope  
18 protein is from a clade-B HIV-1 strain.

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20 20. The pharmaceutical composition of claim 19 wherein said HIV-1 strain is SF162.

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22 21. The pharmaceutical composition of claim 20 wherein said modified HIV-1 envelope  
23 protein is SEQ ID No:2 or SEQ ID No:4.

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25 22. The pharmaceutical composition of claim 20 wherein said DNA encoding said at least  
26 one modified HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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23. A method for assessing whether a compound is capable of generating protective antibodies in an animal against at least one heterologous strain of HIV-1, said animal capable of developing protective antibodies against wild-type HIV-1, said method comprising the steps of immunizing said animal with said compound, depleting said animal of its CD8+ T-lymphocytes, and assessing the presence of protective antibodies in the said animal to at least one heterologous strain of HIV-1.

24. The method of claim 23 wherein said depleting is carried out by administering to said animal anti-CD8 monoclonal antibodies.

25. The method of claim 23 wherein said compound is an HIV-derived polypeptide or fragment thereof or a DNA or virus encoding said peptide or fragment thereof.

26. The method of claim 23 wherein said immunizing is carried out with a DNA vaccine, a protein, or a combination thereof.

27. The method of claim 23 wherein said neutralizing antibodies are protective antibodies.